

**REMARKS**

Reconsideration of the application is respectfully requested for the following reasons:

1. Claim Objections

This objection has been addressed by amending claim 5 to depend from claim 1 rather than claim 4.

2. Rejection of Claims 1, 5, 7, and 13 Under 35 USC §102(b) in view of U.S. Patent No. 5,146,325 (Ng)

This rejection is respectfully traversed on the grounds that the Ng neither discloses nor suggests a high-resolution *still picture* decoding device arranged to display a *still picture* by:

- decoding **even numbered** macroblock lines of a frame data;
- storing the **decoded** even numbered macroblock lines in a frame buffer;
- storing **odd numbered** macroblock lines in a temporary buffer;
- decoding the odd numbered macroblock lines *in real time*; and
- then outputting the **decoded even numbered** macroblock lines from the **frame buffer** together with the *real-time decoded odd numbered* macroblock lines,

thereby reducing the required frame memory by a factor of two without discarding any data, as compared to the prior art. The prior art, including the references cited by the Examiner, either employs a large memory for decoding and storing a complete frame, without discarding any data, or employs a small memory for decoding and storing part of frame, resulting a bad display quality due to discarded data.

Instead of decoding odd and even macroblock lines at different times so that a frame buffer is only required for the even numbered lines, the odd required lines requiring only a temporary buffer, the Ng patent discloses a “video signal decompression apparatus for independently compressing even and odd fields,” which is used to *reduce image display latency* during system start-up and channel changes by independently decompressing the even and odd

fields of data and substituting the opposite field of data for unavailable data (Abstract). It is respectfully submitted that Ng's teaching of *independently compressing even and odd fields to reduce image display latency* is not equivalent to initial decoding and storage of even-numbered lines, and temporary buffering followed by delayed **real-time decoding of odd numbered lines**, in order to display a high-resolution *still picture*. The memory device and decoding means of Ng therefore do not correspond to the claimed memory devices and decoding means.

According to the Examiner, the memory device of Ng has a bit stream buffer (300, figure 5), a temporary buffer (314, figure 5), and a frame buffer (316, figure 5). Applicant wants to point out that the device 314 of Ng is a buffer memory for storing odd field of decompressed image data and the device 316 of Ng is a buffer memory for storing even field of decompressed image data, and these decompressed image data stored in the buffer memories 314, 316 are applied to the multiplexer 320 for output and display (column 10, lines 31-40). Thus, it is known that the buffer memory 314 of Ng is different from the temporary buffer of the present invention, which is provided to store the frame data ***which has not been decoded and is to be decoded in real time*** as the still picture is being displayed.

According to the Examiner, the Ng patent provides for a decoding means (302-312, figure 5) that decodes the bit-stream data in the bit-stream buffer and stores the decoded frame data in the frame buffer or the temporary buffer, such that, when a still picture is to be displayed, the frame buffer stores part of the frame data corresponding to the still picture and the temporary buffer is provided to store the other frame data which is decoded in real time as the still picture is displayed.

This interpretation of Ng's buffer memory 314 is not correct. Buffer memory 314 of Ng (which is deemed as the "temporary buffer" by the Examiner) is provided for storing odd fields of already decompressed image data (column 10, lines 31-40), rather than for storing data **to be decoded**, as is now recited in amended claim 1. ***Since the decompressed image data stored in the buffer memory 314 of Ng cannot (and does not need to) be decoded in real time, it***

*cannot reasonably be said to correspond to the claimed temporary buffer for storing frame data to be decoded.* Instead, in the frame decoding method of Ng, two **same-size** buffer memories are used to store alternately decoded (decompressed) odd and even fields respectively (col. 9, line 58-col. 10, line 7; elements 47 and 48 of Fig. 4).

Unlike the claimed method, the frame decoding method of Ng cannot save required memory and lacks of the feature of real-time decoding for displaying a still picture shown in the invention. As a result, withdrawal of the rejection of claims 1, 5, 7, and 13 under 35 USC §102(b) is respectfully requested.

3. Rejection of Claims 1 and 2 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,141,385 (Yamaji) and 5,790,138 (Hsu)

This rejection is respectfully traversed on the grounds that neither the Yamaji patent nor the Hsu patent, whether considered individually or in any reasonable combination, discloses or suggests a high-resolution still picture decoding method or device arranged to display a still picture by (i) decoding even numbered macroblock lines of a frame data; (ii) storing the *decoded* even numbered macroblock lines in a frame buffer; (iii) storing odd numbered macroblock lines in a temporary buffer; (iv) *decoding* the odd numbered macroblock lines *in real time*; and (v) then outputting the *decoded* even numbered macroblock lines from the frame buffer together with the *real-time decoded* odd numbered macroblock lines, all as recited in claim 1.

Instead, the Yamaji patent discloses an MPEG coded picture decoding apparatus which can display video data that is quite the same as original data even if a loss of MPEG coded video data occurs in a transmission line or the like. Yamaji does not disclose the claimed buffer memory, or that the frame buffer stores only a portion of the macroblock lines and the temporary buffer stores at least one other macroblock line so as to reduce the amount of frame memory required.

The Hsu patent, on the other hand, discloses the use of an expansion frame buffer 306 to provide additional storage capacity for storing a high-resolution image, as opposed to an arrangement for buffering and real-time decoding alternate lines in order to reduce memory requirements. The purpose of the present invention is to display high-resolution still picture with ***limited memory***, and such a purpose is achieved by storing a portion of decoded frame data in a relatively small frame buffer and real-time decoding the other frame data from a temporary buffer which is very small. **This is exactly contrary to Hsu's approach of expanded memory, and therefore Hsu could not possibly have suggested modified of the Yamaji arrangement to obtain the present invention.** Withdrawal of the rejection of claims 1 and 2 under 35 USC §103(a) is accordingly requested.

4. Rejection of Claims 8-12 Under 35 USC §103(a) in view of U.S. Patent Nos. 5,146,325 (Ng) and 5,903,282 (Schoner)

This rejection is respectfully traversed on the grounds that the Schoner patent, like the Ng patent, fails to disclose or suggest a high-resolution still picture decoding method or device arranged to display a still picture by (i) decoding even numbered macroblock lines of a frame data; (ii) storing the *decoded* even numbered macroblock lines in a frame buffer; (iii) storing odd numbered macroblock lines in a temporary buffer; (iv) *decoding* the odd numbered macroblock lines *in real time*; and (v) then outputting the *decoded* even numbered macroblock lines from the frame buffer together with the *real-time decoded* odd numbered macroblock lines, as recited in claim 1, from which claims 8-12 depend.

Furthermore, the Schoner patent fails to disclose the inventive feature recited in claims 8-12 of cyclical reading operations of bit-stream data. Instead, in the system disclosed in the Schoner patent, FIFO pointers are used for reading or re-reading the image in a line rather than in a cycle, and there is no way to achieve the claimed cyclically repeated reading by pointers. As a result, withdrawal of the rejection of claims 8-12 under 35 USC §103(a) is respectfully requested.

Serial Number 09/657,585

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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Date: December 6, 2004

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